Potential Contributions from CNES to ILWS

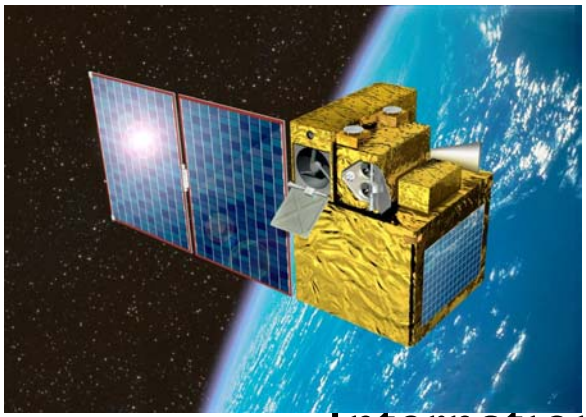
- Since the Washington meeting (september 2002)
  - deep budgetary troubles in CNES
  - ARIANE V '10 tons' failure
  - mission of CNES being revisited (ministerial council 16 april)

• No threat on the contribution to ESA projects (BepiC, Solar orbiter) but resources for P/L contrained

• A few CNES led projects expected to be cancelled

• New set of microsat selection on hold (TARANIS, LYOT)

•But PICARD is not dead, only 'frozen' (CPS meeting 10 april)

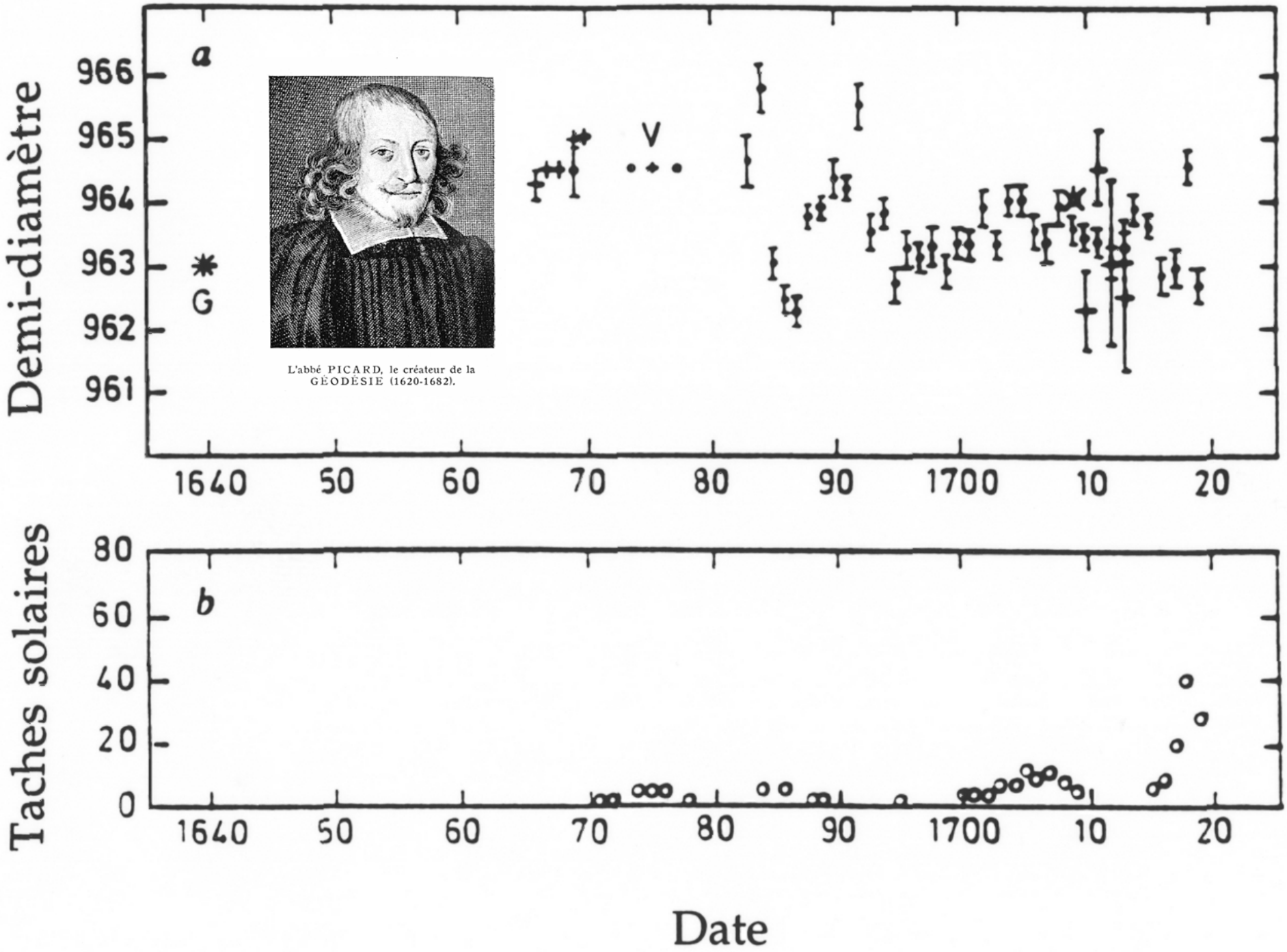


PICARD

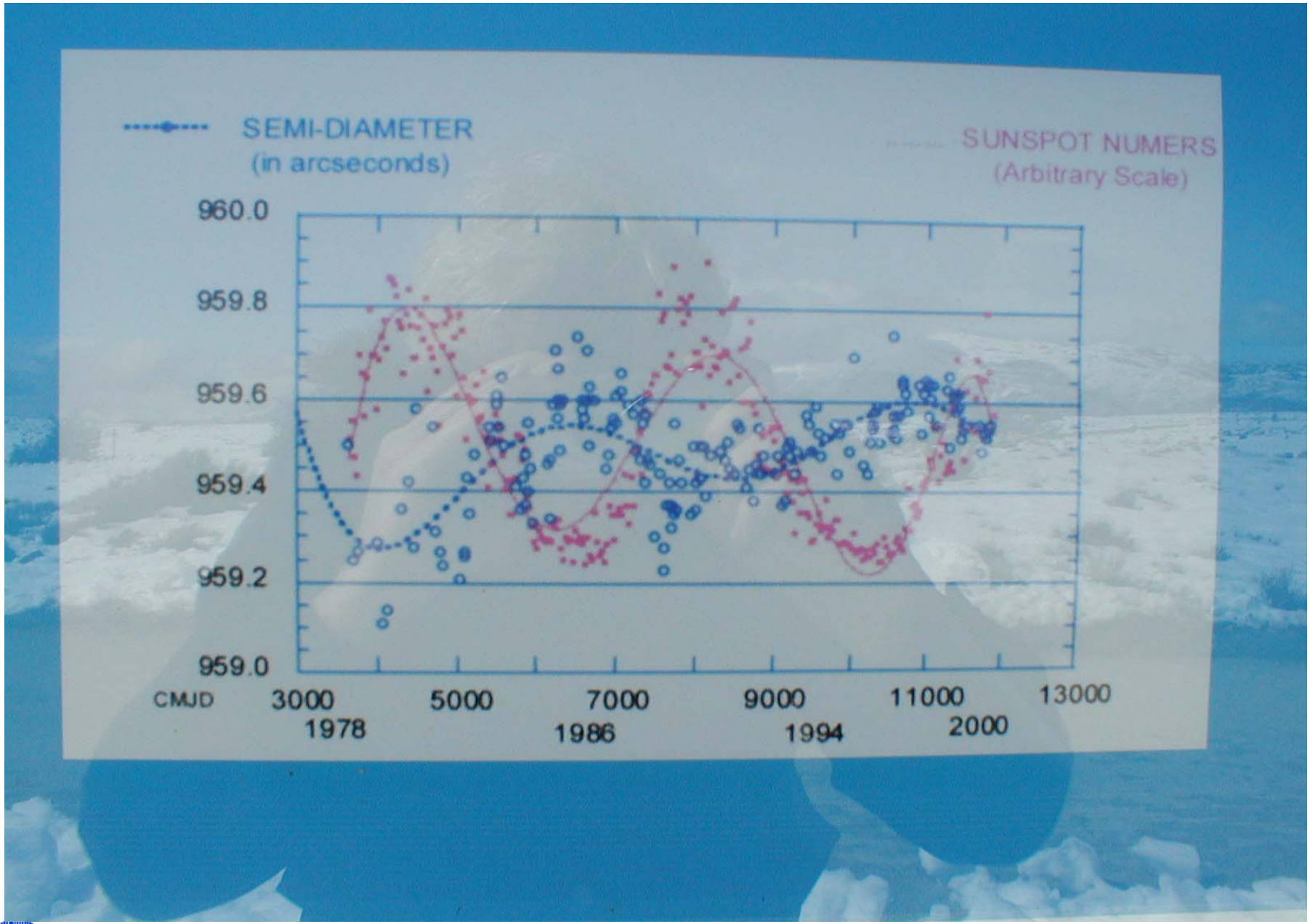
PICARD Objectives

- Variation of the solar diameter
  - Relation diameter/ solar constant/ differential rotation
  - Heliosismology (g modes)
  - Solar shape (flattening)
  - UV variability
  - Space weather

  - Cooperation with Belgium and Switzerland
  - 4 US Co'Is (NRL, SEC, JPL, Kitt Peak)



L'abbé PICARD, le créateur de la GÉODÉSIE (1620-1682).


SEMI-DIAMETER
(in arcseconds)
SUNSPOT NUMERS
(Arbitrary Scale)
960.0
959.8
959.6
959.4
959.2
959.0
CMJD
3000
5000
7000
9000
11000
13000
1978
1986
1994
2000

Conclusions

• ILWS has already proven its efficiency in giving a strong argument for rescuing PICARD

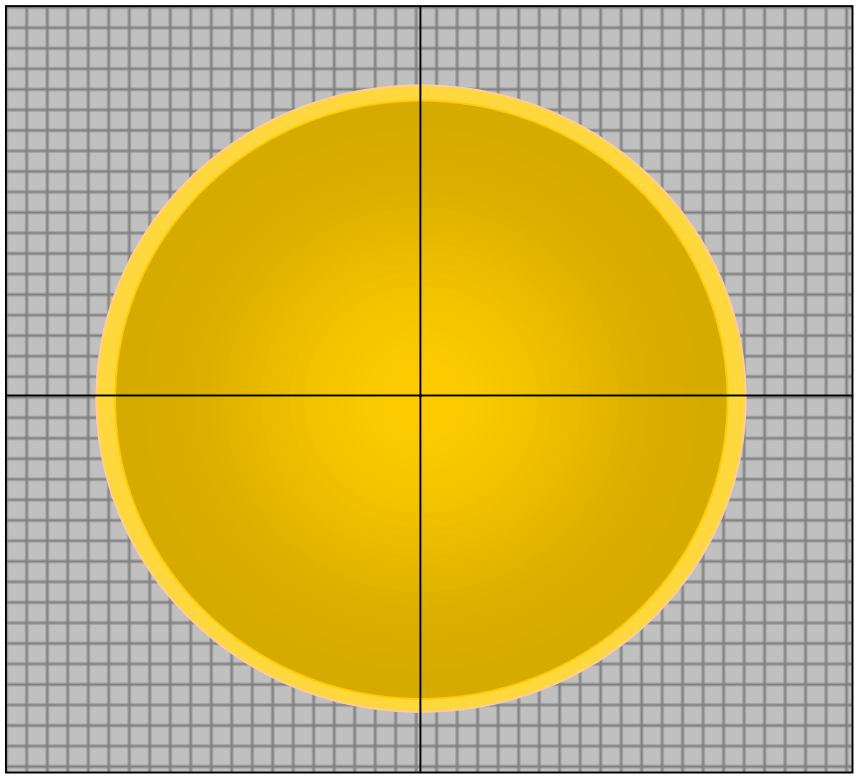
• CNES, as an ESA member state, is contributing to ESA projects in the frame of the scientific mandatory programme

• Which future for ‘micro-sat’ projects developed on a national level ?

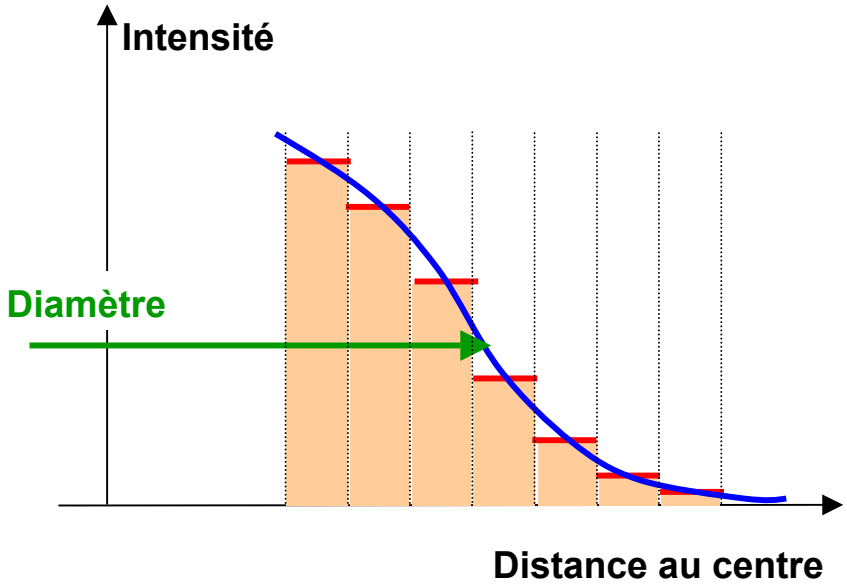
• ILWS labelization as a criterion for the selection process ?

• Which process to be set up in the ILWS frame for mission evaluation?

IMAGE CCD (2048x2048 pixels)



Limbe solaire (quelques pixels)



1 mas = 1/1000 px

PRINCIPLES

A telescope makes an image of the Sun on a 2k by 2k CCD detector.

Wavelengths are selected by interference filters placed on a wheel.

Wavelengths domain are chosen free of Fraunhofer lines.

The platform is stabilized at 36 arcseconds. The telescope primary mirror stabilizes the Sun image within 0.1 arcsecond using piezo electric actuators.

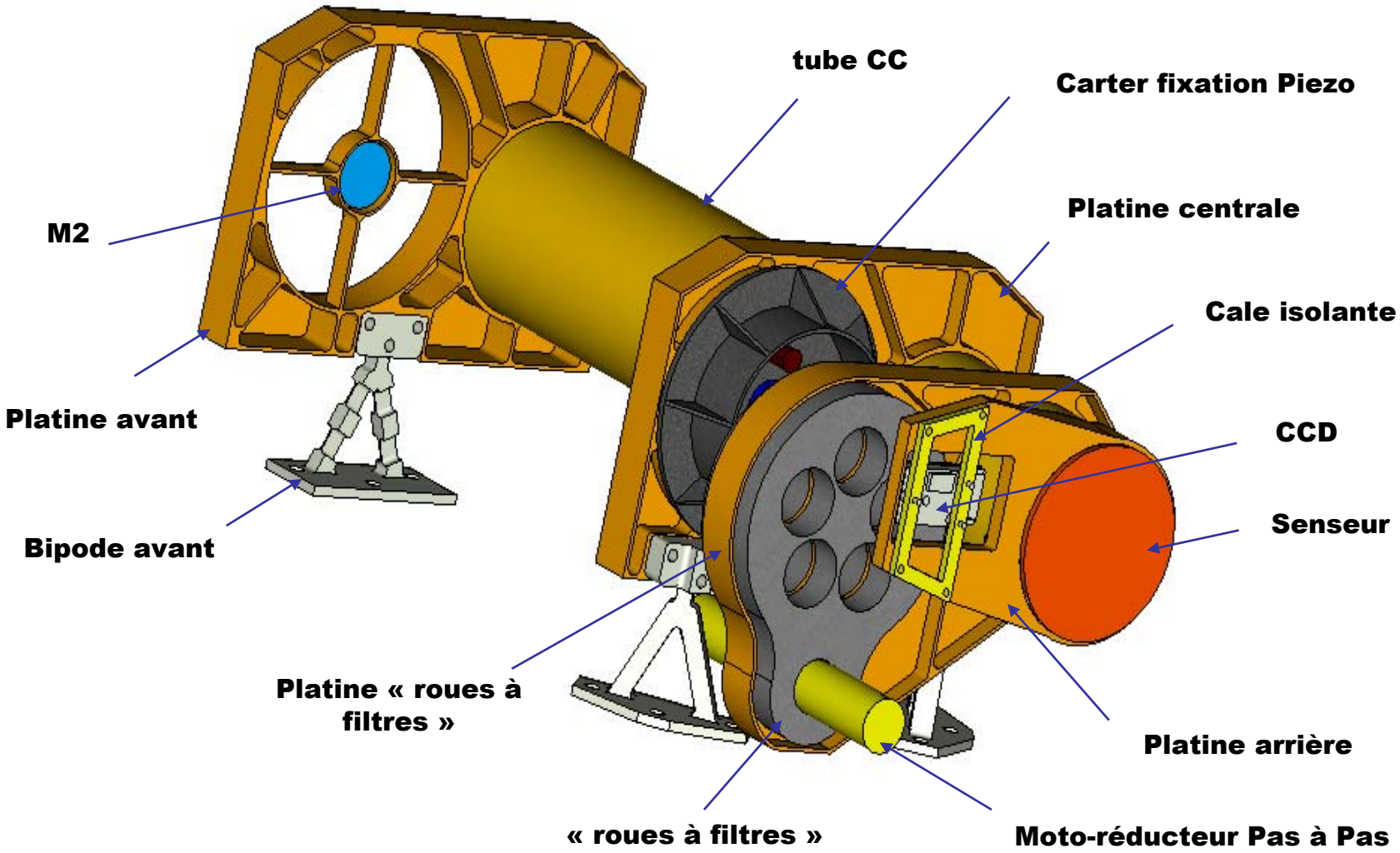
A 4-prism system provides an internal angular reference to measure in orbit the relationship between the pixel position and angle wrt the instrument optical axis.

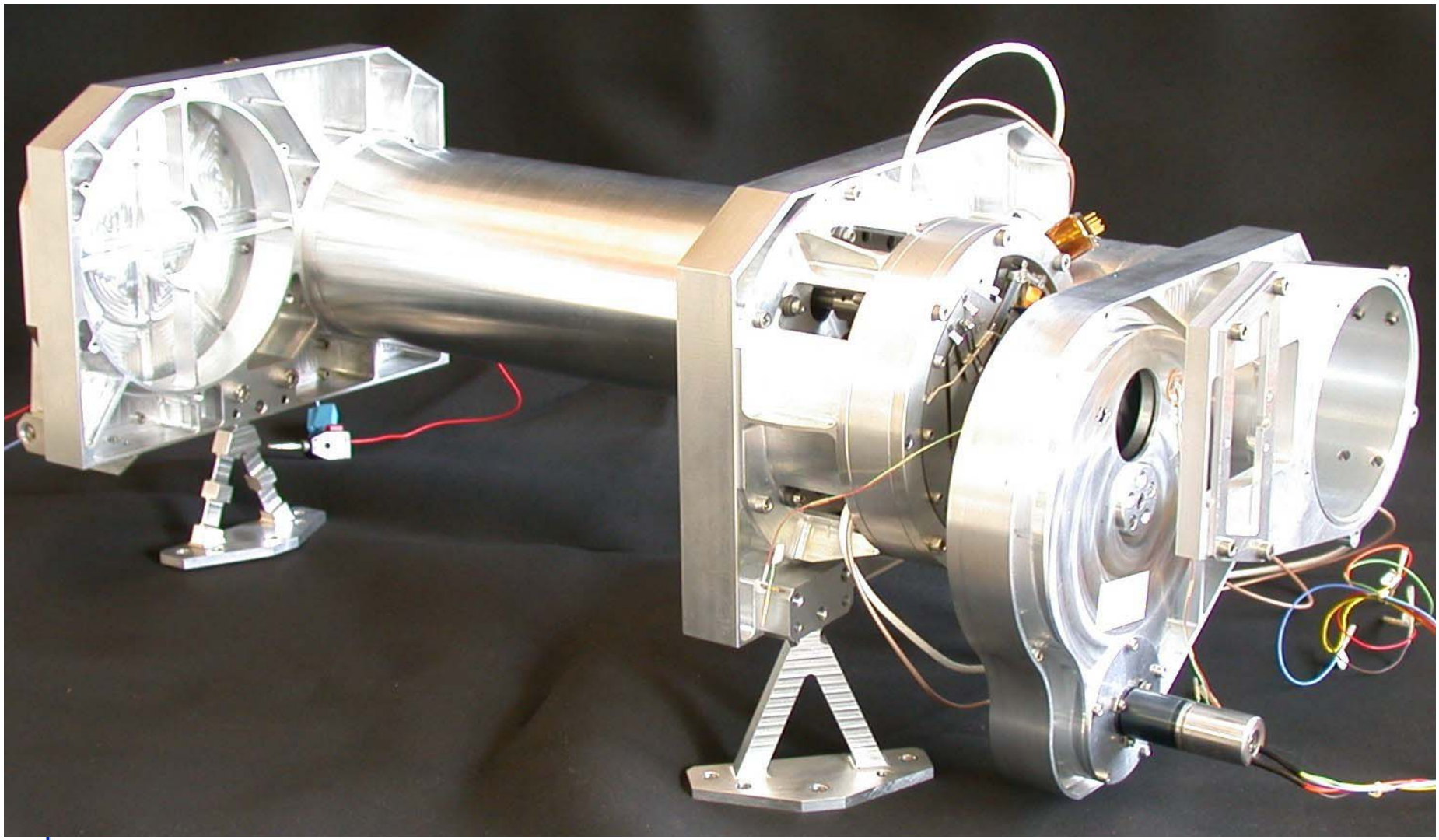
Use of stable materials : Zerodur for mirrors, C-C and Invar for structure,
The whole instrument is temperature stabilized (0.5°C). The CCD is also temperature stabilized (0.1°C)

Precision : 3 milliarcsecondes.

The diameter measurements are refered to star angular distances by rotating the spacecraft towards some stars (Hipparcos catalogue and next) likely every 6 months.

Description SODISM





PICARD – Bâtiment SODISM II et MISOLFA – Observatoire du CALERN –

PICARD CU – MM – juin 2002 -